

4. Supply and Demand Developments

GDP data for the third quarter of 2015 show that economic activity was stronger than anticipated in the October Inflation Report. The GDP posted a quarterly and annual growth of 1.3 and 4.0 percent, respectively. The annual GDP growth was mainly driven by agriculture and net taxes. Thanks to a robust increase in financial and insurance activities, services made a major contribution to the annual and quarterly GDP growth. On the other hand, the industrial value added stimulated growth only modestly. On the expenditures side, the final domestic demand was the main driver of the annual growth through consumer spending, while net exports supported growth in quarterly terms.

Data released for the fourth quarter of 2015 point out that quarterly GDP growth may decelerate. Industrial production was up 0.6 percent in October-November from the third-quarter average. Sales, production and import indicators regarding domestic demand show a quarter-on-quarter slowdown in final domestic demand. Additionally, after the October-November rise, the export quantity index excluding gold is estimated to recede in December due to geopolitical tensions, causing external demand to provide less support to growth in the fourth quarter of 2015.

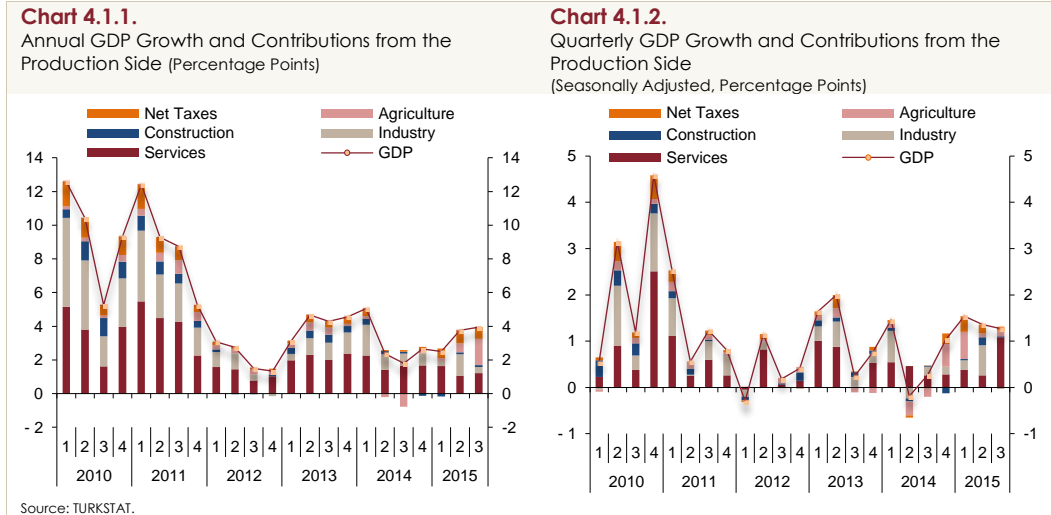
In 2016, domestic demand is likely to be supported by the income channel through wage increases and lower oil prices, and by the confidence channel through waning domestic uncertainties, thus providing a larger contribution to growth compared to 2015. The ongoing European recovery might balance the negative effects of geopolitical factors, and therefore, external demand might offer an increased yearly contribution to growth. Accordingly, GDP growth is expected to be slightly more robust in 2016 than in 2015. However, the risks on growth appear to be on the downside for the upcoming period, mostly stemming from external demand.

The spillovers from the Chinese economic slowdown into financial markets and global trade, the likely adverse income effect of falling oil prices on Turkey's oil-exporting trade partners and geopolitical developments put downward pressure on external demand for the upcoming period, while the recovery in Europe is the main driver of exports. Yet, risks on domestic demand seem to be more balanced for 2016. The improved consumer and investor sentiment and the probability that postponed investments due to domestic uncertainty in 2015 would take place in 2016 put upward pressure on growth, whereas the likely impact of the global monetary policy uncertainty on consumption and investment spending through financial conditions and costs poses a downside risk to growth. It is anticipated that favorable developments in the terms of trade coupled with the current macroprudential framework will further support the recovery in the current account balance over the forthcoming period.

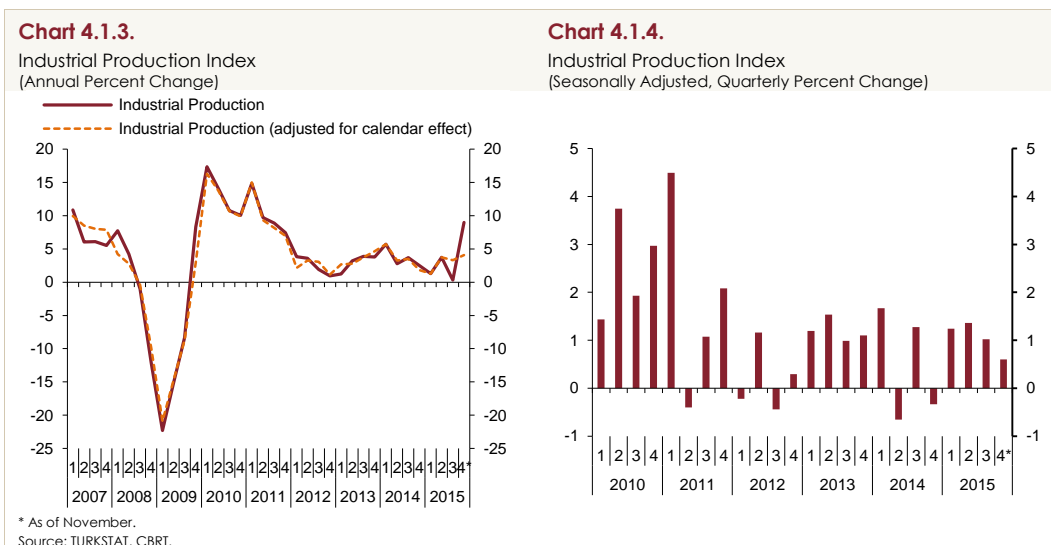
4.1. Supply Developments

According to the data released by TURKSTAT, economic activity in the third quarter of 2015 proved stronger than projected in the October Inflation Report, and the GDP posted a year-on-year increase by 4.0 percent (Chart 4.1.1). This higher-than-expected increase in the GDP was driven by the large increases in the agricultural sector and net taxes as well as the industrial value added that soared faster than the annual growth of the industrial production. In seasonal and calendar effect adjusted

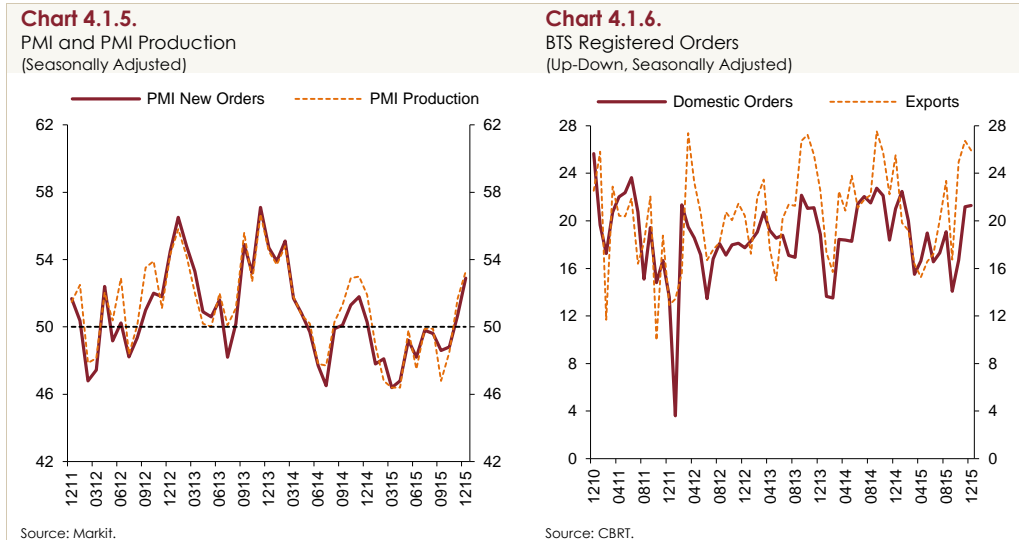
terms, the GDP grew by 1.3 percent quarter-on-quarter. Rising by 2.2 percent from the second quarter, the services value added was the major contributor to quarterly growth in this period (Chart 4.1.2).



Changes in the number of working days caused by moving holidays led to sharp fluctuations in annual percentage changes of raw data in the last two quarters of 2015. In fact, having increased by 0.3 percent year-on-year in the third quarter, industrial production posted a 9.0 percent growth in October-November. Analyzing the data in calendar effect adjusted terms to have a better understanding of the underlying trends in annual changes reveals that production maintained its yearly growth pace and recorded a year-on-year increase of 4.1 percent in October-November (Chart 4.1.3). According to data adjusted for seasonal and calendar effects, industrial production surged strongly in August, and then remained horizontal for a while. This was followed by a monthly contraction in November, which led to a mild 0.6 percent quarter-on-quarter growth in October-November period (Chart 4.1.4).

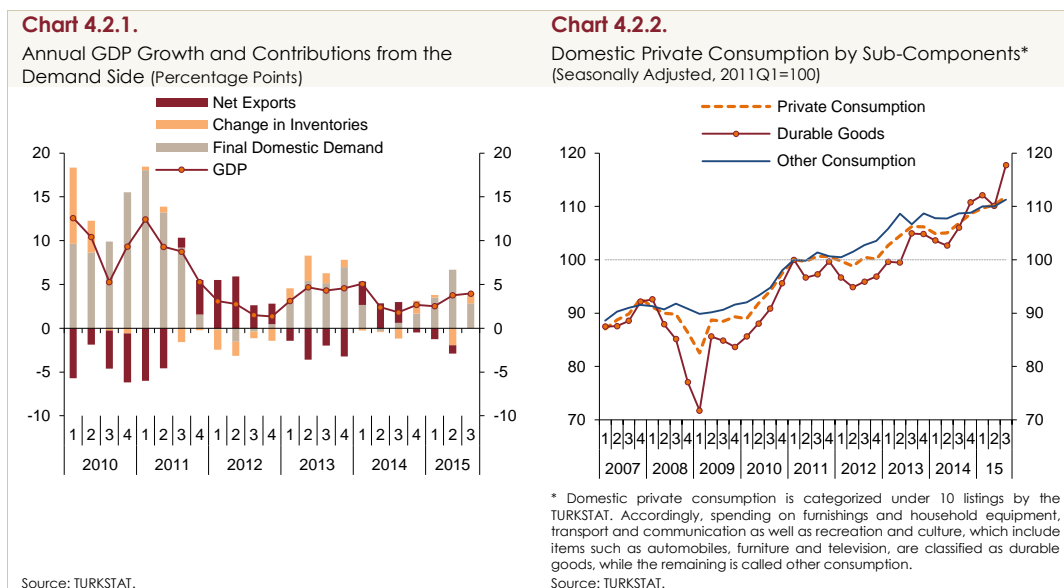


Survey indicators for December point to a continued production growth. Responses to PMI new orders and production questions signal recovery (Chart 4.1.5). Among BTS data, expectations for 3-month-ahead domestic and external market orders hover at elevated levels (Chart 4.1.6). Therefore, production is expected to maintain its moderate growth in the upcoming period.

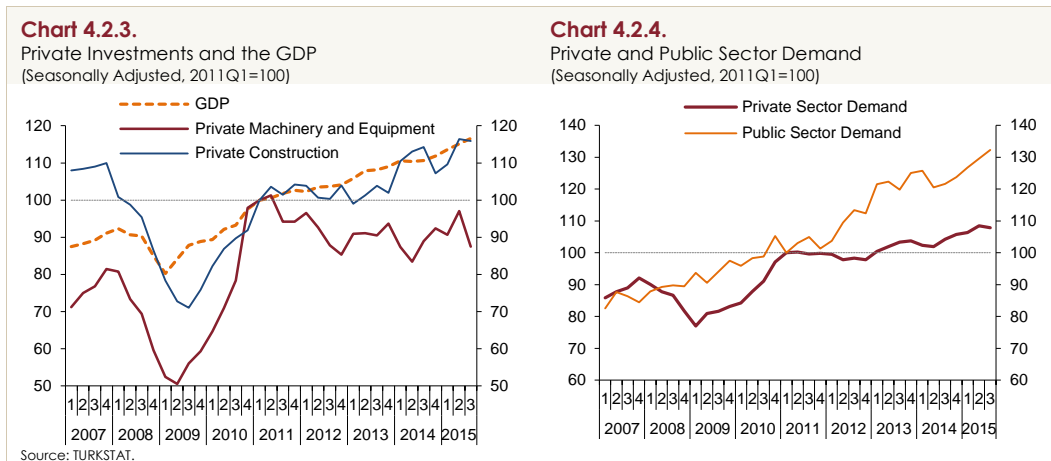


4.2. Demand Developments

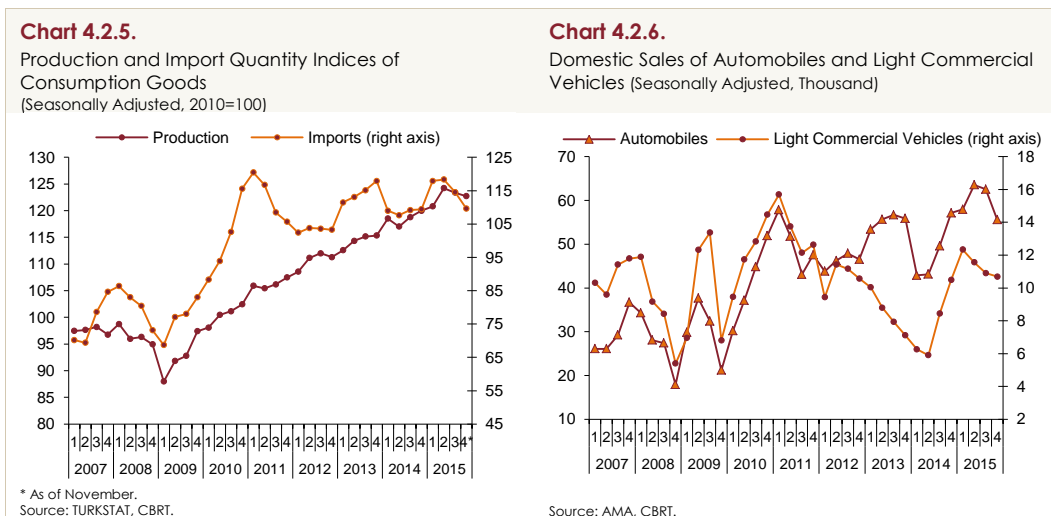
The GDP data for the third quarter of 2015 on the expenditures side indicate that final domestic demand made a smaller contribution to annual growth compared to the previous quarter, whereas net exports provided a positive, albeit limited, support contrary to previous quarters (Chart 4.2.1). The deceleration in final domestic demand in this quarter resulted from both consumption and investment expenditures. In seasonally adjusted terms, quarterly growth saw no contribution from domestic demand due to investment spending but was boosted by net exports.

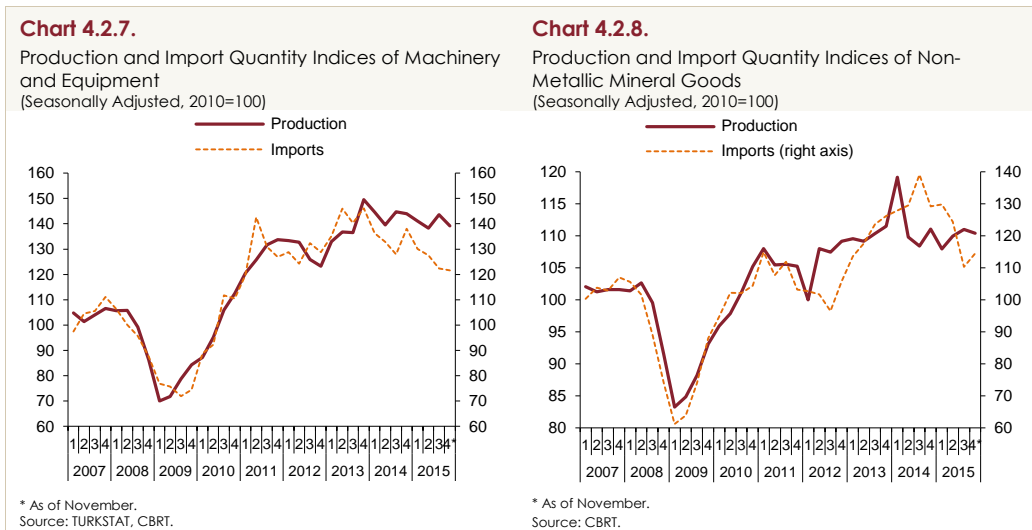


Private consumption expenditures registered a quarter-on-quarter acceleration in the third quarter. Expenditures on durable goods grew robustly, while expenditures on other consumption goods followed a moderate course in this quarter (Chart 4.2.2). After a strong second quarter, private machinery and equipment investments decreased sharply in the third quarter (Chart 4.2.3). In total, private demand dropped in the third quarter. Having remained on the rise for the last three quarters, public demand continued to grow in the third quarter owing to the strong upsurge in public consumption expenditures (Chart 4.2.4). Meanwhile, public investments fell due to machinery and equipment investments.

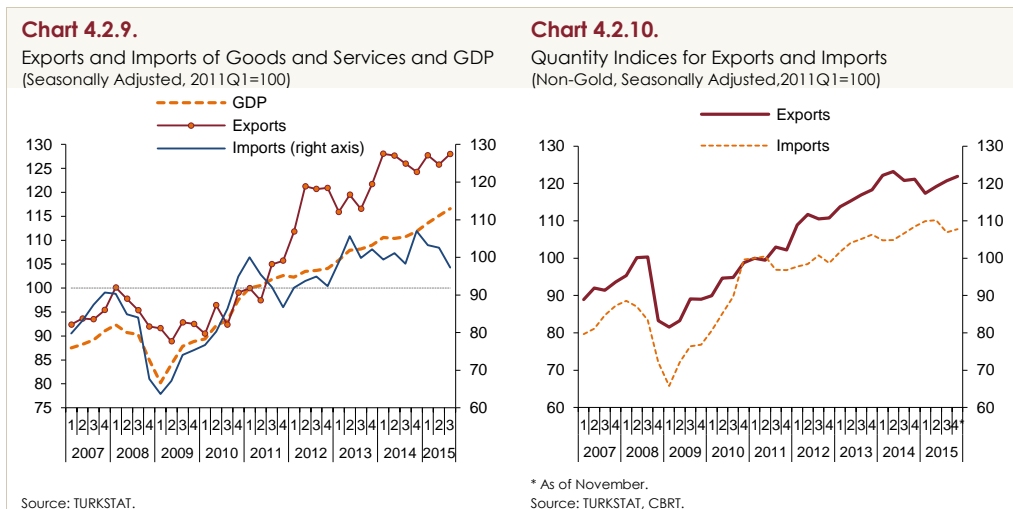


Economic activity is expected to post a slower quarterly growth in the fourth quarter on the back of both domestic demand and net exports. In fact, the production and imports of consumption goods, which had induced growth, declined in the final quarter (Chart 4.2.5). Similarly, sales of automobiles, a key driver of private consumption spending, saw a decline in the same period (Chart 4.2.6). On the investments front, the production and imports of machinery and equipment remained sluggish (Chart 4.2.7). An indicator for construction investments, the production and imports of non-metallic mineral goods slowed in the October-November period (Chart 4.2.8). All in all, current indicators suggest a smaller contribution of domestic demand to quarterly growth in the fourth quarter.





Exports of goods and services were up in the third quarter, whereas the imports thereof dropped (Chart 4.2.9). Meanwhile, quantity indices excluding gold, which give a better understanding of the underlying trend of external trade, followed a similar pattern in the third quarter. Non-gold quantity indices posted a quarter-on-quarter increase for both exports and imports in the October-November period, with exports recording a more marked upturn (Chart 4.2.10). Yet, geopolitical factors and the drag on Turkish exports led by Russia and Iraq pose downside risks to the positive contribution of net exports to the current account balance and growth.

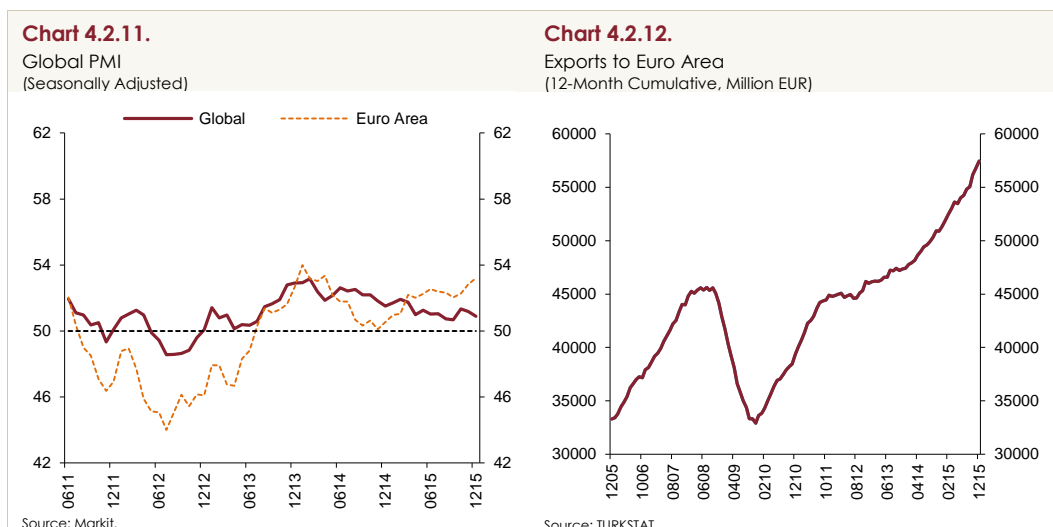


In sum, economic activity posted a stronger-than-expected growth in the third quarter of 2015 largely due to private consumption spending. Yet, fourth-quarter indicators on sales, production and imports point to a quarterly slowdown in domestic demand. Additionally, after the October-November rise, the non-gold export quantity index might decline in December due to geopolitical tensions, thus causing external demand to deliver less support to quarterly growth in the final quarter of 2015.

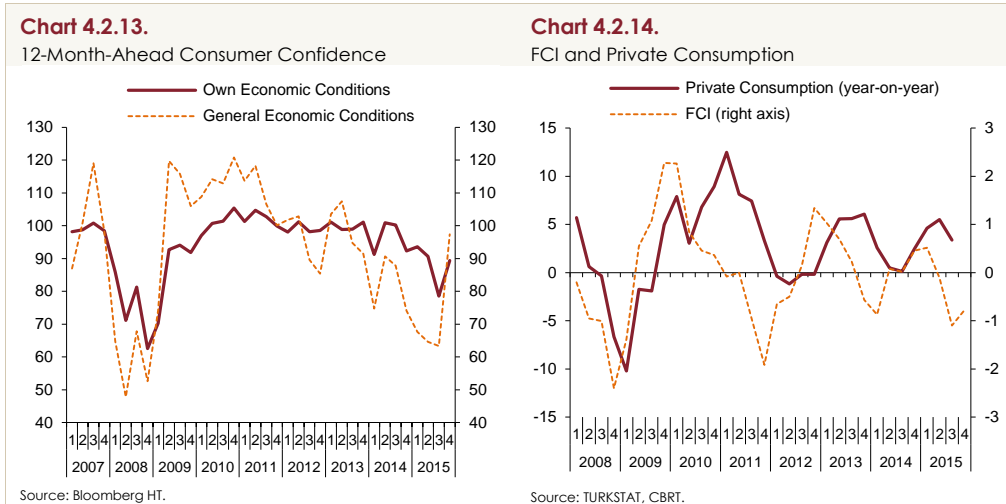
Outlook for 2016

Recent data suggest that the economy might grow at a stronger-than-expected pace in 2015. After dropping on domestic and external factors in the third quarter, consumer confidence surged notably following November's general elections. Likewise, firms' sentiments have improved gradually. Despite some recovery in global volatility after the Fed's policy rate hike in December, markets entered 2016 with volatility on the rise again due to heightening concerns about China and geopolitical developments. Therefore, the adverse effects of the uncertainty over global growth and monetary policies on emerging market capital inflows remain a risk for 2016. Downside risks to external demand are a little higher than in the October reporting period, yet the brisk growth performance of 2015 is expected to continue into 2016 amid the waning domestic uncertainty, an accommodating confidence and rising wages. The demand outlook for 2016 reveals that domestic demand is likely to be slightly higher than in 2015 while exports are expected to further support growth. Given this outlook, external demand is subject to significant downside risks whereas risks to domestic demand are more balanced.

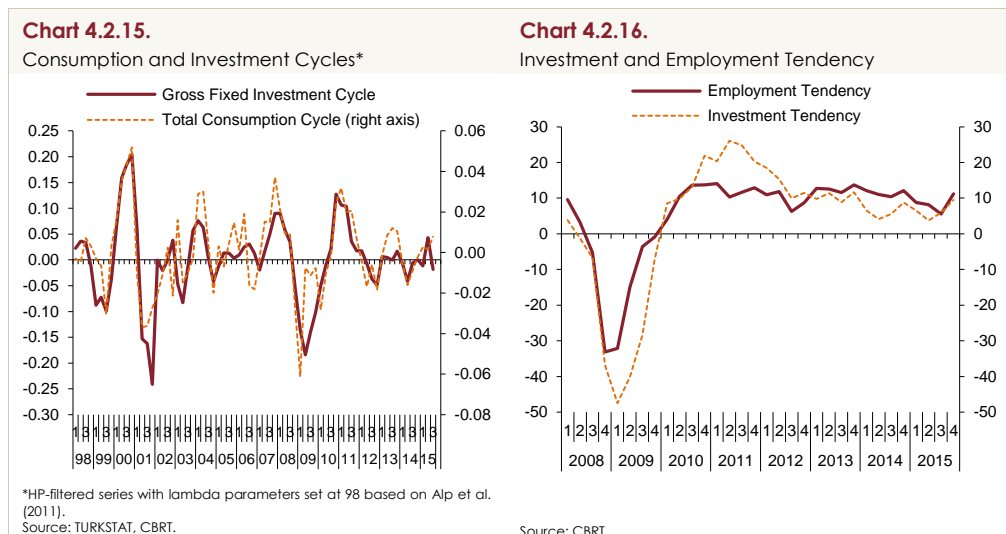
Downside risks to external demand picked up in the past quarter. The principal factor dampening external demand is the economic sanctions on Turkey imposed by Russia, which have a significant share in Turkey's exports and tourism revenues. Accordingly, Russia banned the imports of certain food products from Turkey as of January 1 and imposed some restrictions on Turkish citizens working in Russia. These economic sanctions are likely to hurt food and agricultural industries as well as leather, textile and garment exports, which play a significant role in the shuttle trade with Russia. Moreover, the sanctions are estimated to trigger a drop in direct investment and tourism revenues by restricting the activities of Turkish companies (mostly construction companies) operating in Russia. Other major downside risks to external demand include the Chinese slowdown, the ongoing geopolitical turmoil in Iraq and Syria, and the reduced income in oil-exporting countries due to historically low oil prices.



On the other hand, the rebound in Europe, one of Turkey's largest export markets, accelerated in the final quarter of 2015 (Chart 4.2.11). The Euro Area recovery and the destination flexibility of Turkish exports support exports. In fact, exports destined to the Euro Area have been on the rise recently (Chart 4.2.12).

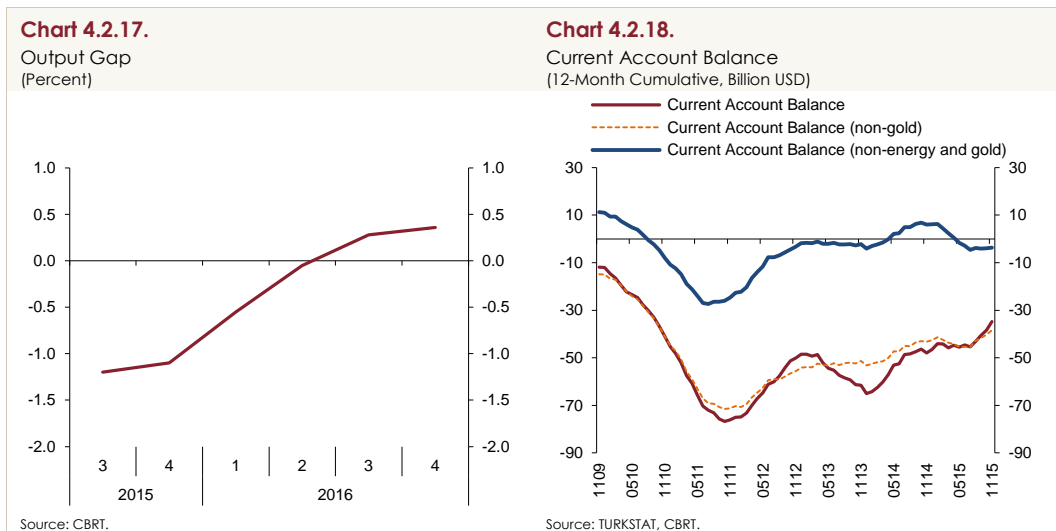


Meanwhile, risks to domestic demand are balanced. With political uncertainty cleared after the general elections of November 1, consumer expectations turned more upbeat (Chart 4.2.13). Consumer demand is likely to be bolstered by the income channel as well in 2016. The first-round effects of the minimum wage hike will spur consumer demand while its second-round effects might raise the overall wage level, both of which will help the increase in consumption. On the other hand, the wage hike may restrain employment growth, weigh on inflation and thus lead to a decline in spending. Although financial conditions have continued to limit consumption recently, they are likely to improve slightly in the upcoming period amid decreased domestic uncertainty (Chart 4.2.14). Yet, a possible tightening in financial conditions due to global growth concerns, geopolitical risks and monetary policy uncertainty will pose a downside risk to spending.



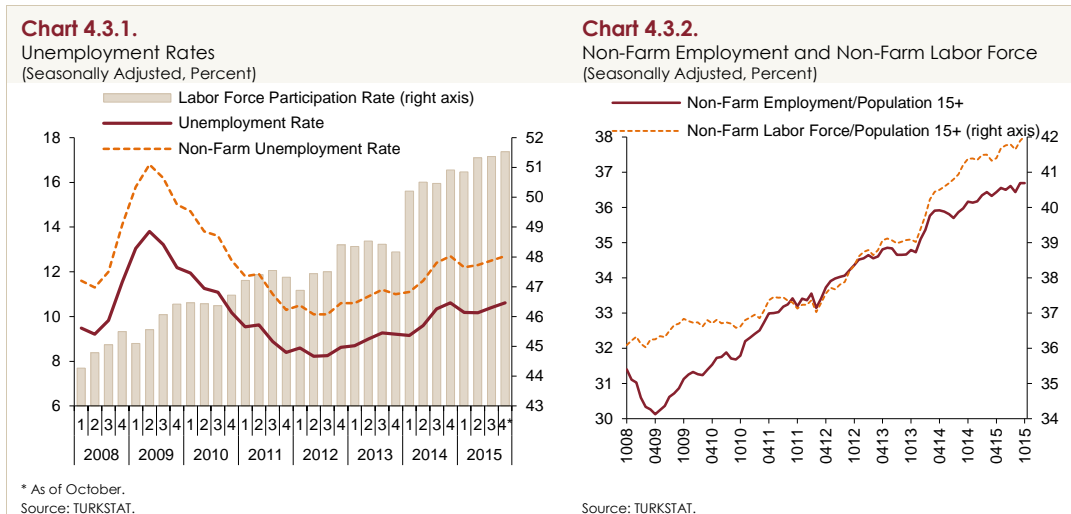
Fixed capital investments soared dramatically after the global crisis but remained weak over the past three years both across the globe and also in Turkey. Yet, investments, which have remained very low in recent years, are expected to rise in 2016. In particular, given a relatively stronger demand, delayed investments by firms are expected to be put into effect (Chart 4.2.15). In fact, firms' expectations for employment and investment have improved notably lately (Chart 4.2.16). Additionally, public investments postponed in 2015 due to the domestic uncertainty might be finalized in 2016. There are also downside risks to investments. The weakening of capital inflows owing to global volatility and a likely tightening in financial conditions may hamper the financing of investments. Moreover, lower profitability due to increased costs may also restrain investments.

2016 is likely to be marked by a slightly more accelerated economic growth than in 2015 and a more robust domestic demand than external demand (Chart 4.2.17). Despite this demand outlook, the current account balance is expected to improve further in 2016 owing to macroprudential measures and lower commodity prices (Chart 4.2.18). In addition, the output gap is envisaged to narrow gradually amid the recovering domestic demand.

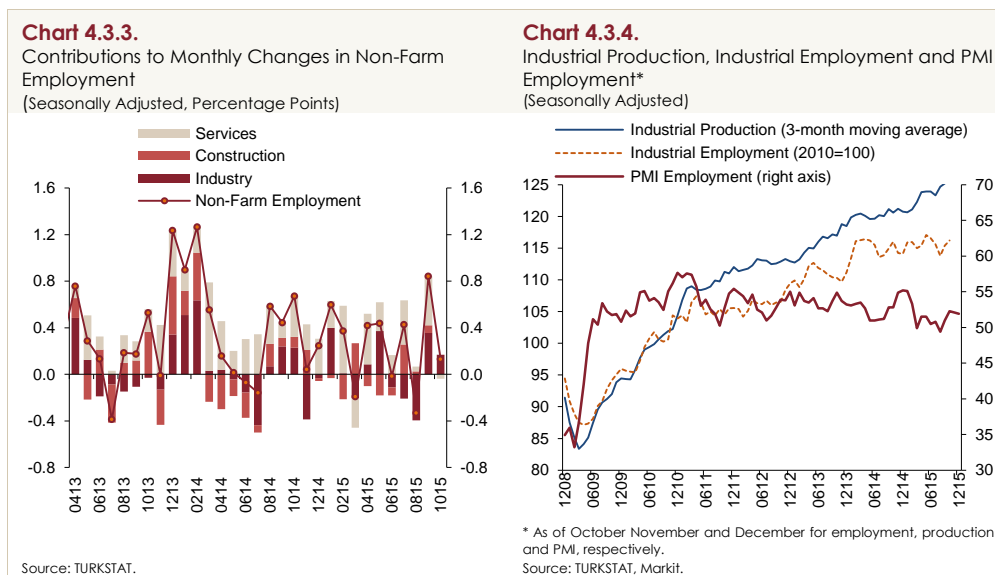


4.3. Labor Market

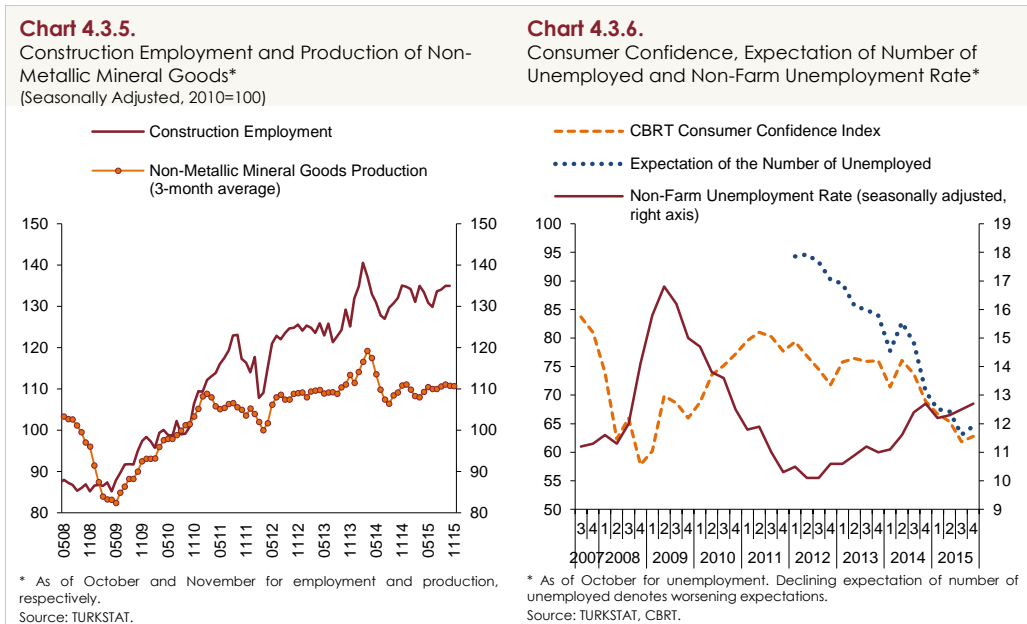
Total and non-farm unemployment rates recorded a year-on-year increase in the first ten months of 2015 (Chart 4.3.1). The decline in non-farm employment growth compared to the previous year and the upsurge in labor force participation put upward pressure on non-farm unemployment (Chart 4.3.2). Across sub-sectors, the services sector was the main driver of employment growth in the first ten months, while construction and industrial employment only inched up year-on-year (Chart 4.3.3).



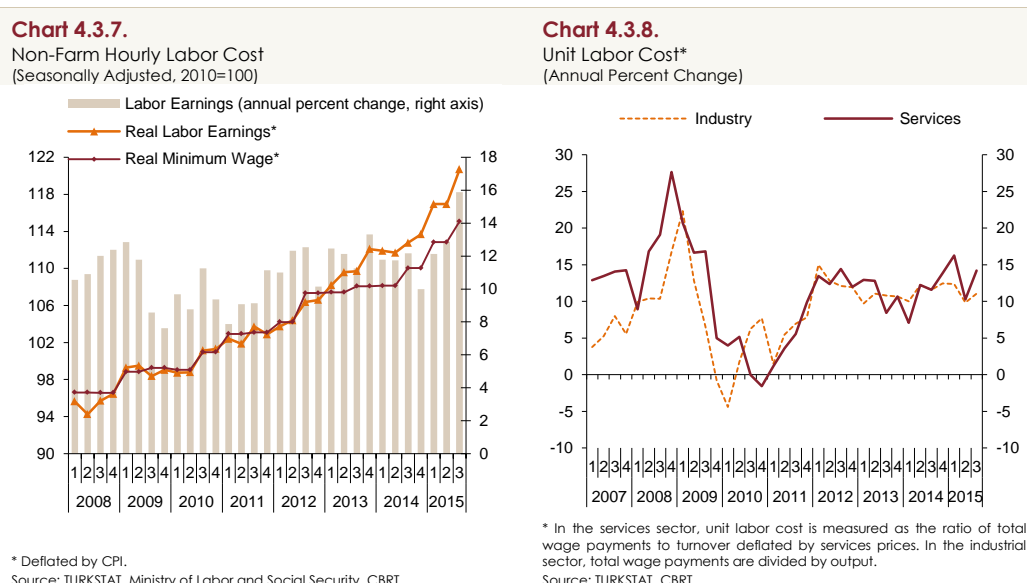
After falling in June, July and August 2015, employment in industry recorded the largest growth among other sectors in September and October. The PMI employment reading hints at a rise in industrial employment for the final quarter of 2015, while 3-month averages reveal a mild increase in industrial production (Chart 4.3.4). In view of production and survey indicators, industrial employment is likely to post a moderate growth in the fourth quarter.



After a small uptick in August and September 2015, construction employment remained unchanged from the previous quarter in October (Chart 4.3.5). The production of non-metallic mineral goods, a key indicator for construction employment, has been horizontal since April. Construction employment is likely to continue to grow modestly for the rest of the year. Meanwhile, unemployment expectations of households picked up slightly in the final quarter after worsening over the first three quarters. The CBRT Consumer Confidence Index and the expectation of the number of unemployed, one of the sub-items of the index, followed a similar pattern (Chart 4.3.6). Thus, unemployment rates are expected to remain near the third-quarter levels in the fourth quarter.



Wage developments reveal that hourly wages accelerated in the third quarter (Chart 4.3.7). Real wages are also on a similar track. Hourly wages continued to move in tandem with the minimum wage. The rise in hourly wages above productivity gains pushed unit labor costs higher in the third quarter of 2015. Unit labor costs increased by about 10 and 15 percent year-on-year across industrial and services sectors, respectively (Chart 4.3.8). The rise in unit labor costs is expected to be even more marked in 2016. Regarding the wage hike, it should be noted that income and consumption are correlated such that a ceteris paribus increase in income leads to higher spending. As revealed by GDP developments, private consumption spending continues to register a yearly rise. Therefore, increased wages might drive domestic demand higher over the upcoming period.



In conclusion, indicators for the fourth quarter of 2015 point to no major change in the non-farm unemployment rate. The significant minimum wage hike appears to be an important factor, which may affect the labor market dynamics throughout 2016. In theory, a sizeable increase in minimum wages could naturally pull employment down and push the overall wage level up. However, the additional cost on employers due to the wage hike will be financed by government funds, which will restrict the adverse effects on employment and the overall wage level.

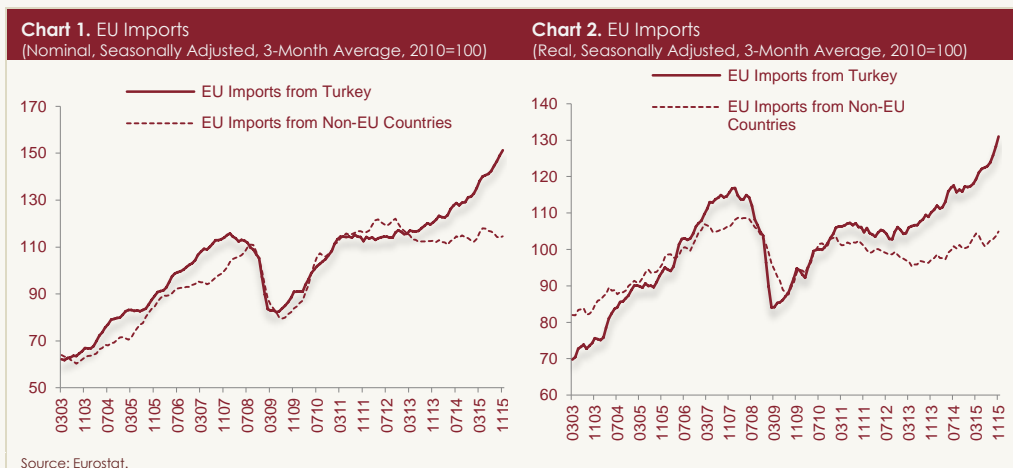
Box
4.1

Recent Changes in Turkey's Export Market Shares

Turkey's exports contracted by 8.7 percent year-on-year in 2015 to 143.9 billion USD.¹ Although readings initially point to a dramatic decline in the export performance, some factors unique to 2015 may impede the interpretation of the export performance. These factors include the EUR-USD parity turning strongly in favor of the USD, export prices plunging on par with global commodity prices and geopolitical developments. Thus, this box analyzes the recent changes in export market shares for a better understanding of Turkey's performance in 2015.

Throughout 2015, two main factors stood out with regards to Turkey's export markets. Firstly, the slowing domestic demand across energy-exporting countries, particularly Russia and MENA, coupled with geopolitical tensions had an adverse effect on the exports destined to these countries, causing Turkey's market share to decline. Secondly, exports to EU countries and the US were relatively stronger, helping market shares rise in these destinations.

The depreciation of the euro against the US dollar in 2015 requires caution in interpreting USD-denominated external trade data by countries and country groups. This so-called parity effect causes the euro-denominated exports to EU countries to appear weaker than they actually are. In fact, Turkish exports to the EU decreased by 7.2 percent year on year in USD terms, while having increased by 11.6 percent in euro terms in the January-November period. On the other hand, the EU's post-global crisis nominal imports from non-EU countries lost its pre-crisis momentum and remained horizontal, but imports from Turkey diverged from non-EU imports by mid-2013 and started to pick up in 2015 (Chart 1), which also indicates that Turkey's market share in EU countries has increased. The divergence of Turkey's market share in EU imports is more evident in quantity (real) terms (Chart 2).

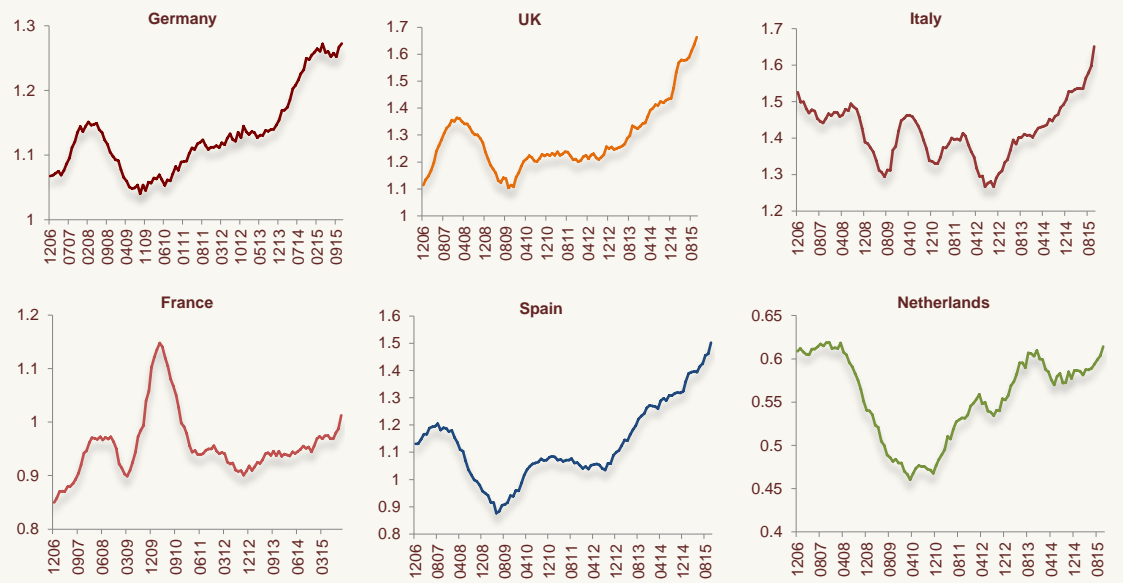


¹ Provisional data of the Ministry of Customs and Trade as of December 2015.

The market share grows evenly across EU countries (Chart 3). The ratio of Turkish exports to Germany, the UK, Italy, France, Spain and the Netherlands, which are among Turkey's top 10 export destinations, to imports of the respective countries rose dramatically in 2014 and 2015. Among these countries, France and the Netherlands were the only ones where Turkey's market share increased at a relatively slower pace.

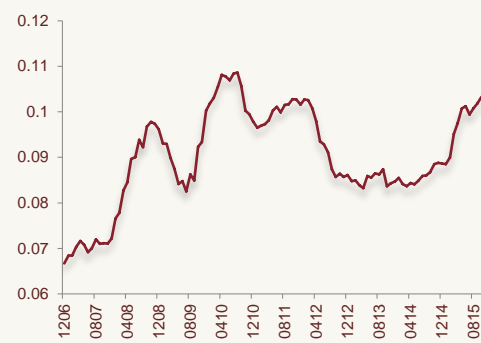
Across non-EU export markets, Turkey's market shares in Southeast Asia and the US have seen some steady growth recently. Yet, these are quite small as Turkey's shares hover around one-thousandth and three-thousandth, respectively, of total imports in Southeast Asia and US (Charts 4 and 5).

Chart 3. Turkey's Export Shares in Selected EU Countries
(Percent of Total Imports)



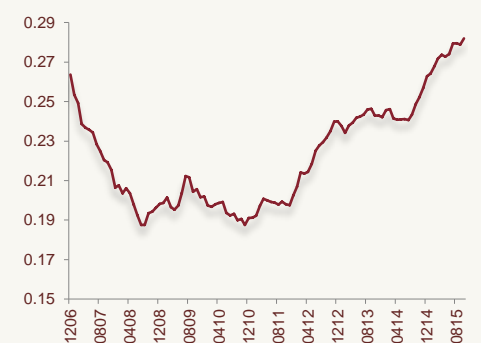
Source: TURKSTAT, WTO.

Chart 4. Turkey's Export Shares in Southeast Asia
(Percent of Total Imports)



Source: TURKSTAT, WTO.

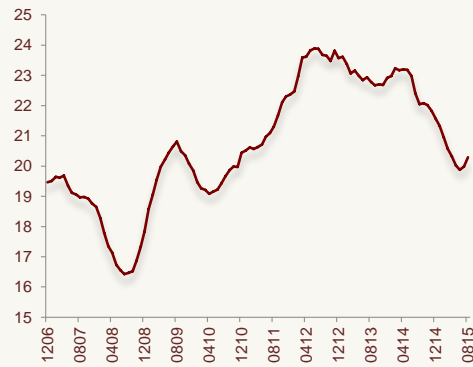
Chart 5. Turkey's Export Shares in US
(Percent of Total Imports)



Turkey saw a dipping market share in Russia and Iraq, where geopolitical tensions and sluggish growth performances played a major role. In fact, Turkey's export share in Iraqi imports fell from around 24 percent in 2013 to 20 percent in 2015, while that in Russian imports declined from 2 to 1.9 percent (Charts 6 and 7). Due to the sizeable share of exports to Russia and Iraq in Turkey's exports, the fall in market share had a significant adverse effect on Turkey's exports in 2015.

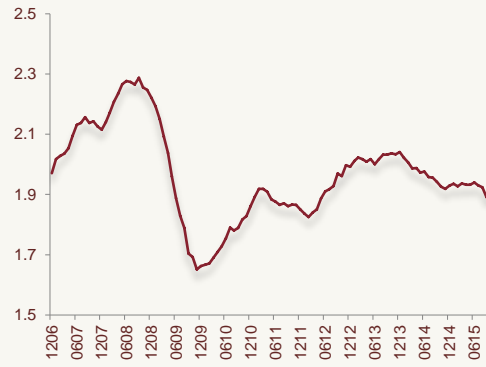
Analyzing the countries² where Turkey's export shares have recently gone up or down helps to draw two major facts. First, the expansion of Turkey's market share in EU countries almost coincides with the contraction of its shares in countries with escalating geopolitical tensions. For example, Turkey's market shares in the EU started to accelerate as of early 2014 when its market shares in Russia and Iraq started to fall simultaneously. This evidently indicates that Turkish companies moved from a geopolitically unstable market with adverse demand conditions to relatively less troubled markets, thus compensating for the negative effects. In fact, when the EU's external demand conditions worsened in the 2008-2012 period, Turkish companies shifted towards the less crisis-stricken Middle East and North Africa.³ Secondly, Turkish exports were more inclined towards relatively faster growing economies than weakening economies in 2014 and 2015. More specifically, during these years, growth rates were more robust in countries with an increasing market share in Turkish exports than in countries with a decreasing market share. The former group of countries is expected to grow at a faster pace in 2016 than the latter group, which implies, given the changing target region composition, that Turkey's export performance for 2016 will be stronger than in 2015.

Chart 6. Turkey's Export Shares in Iraq
(Percent of Total Imports)



Source: TURKSTAT, WTO, IMF.

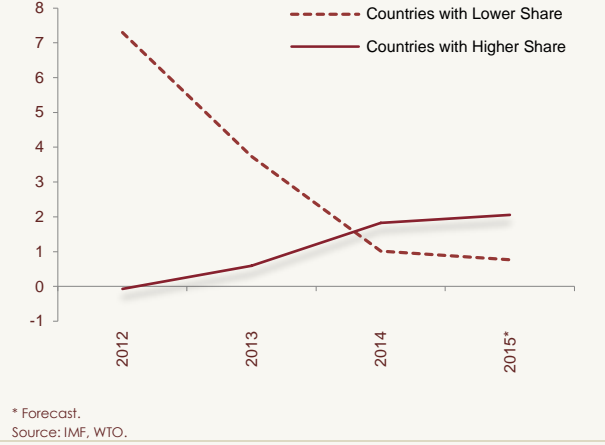
Chart 7. Turkey's Export Shares in Russia
(Percent of Total Imports)



² Top 20 countries in Turkey's export market shares.

³ For further details, see Aldan et al. (2012).

Chart 8. Export-Weighted GDP Growth in Turkey's Trading Partners (Percent)



In sum, the market loss that Turkey suffered due to geopolitical uncertainty and the economic slowdown across energy-exporting countries was compensated by a market expansion in the EU and the US. If the market shares in the EU and the US rise further or at least remain stable in 2016, Turkey's export performance might be even stronger than in 2015. This will be assured, if these countries, which have a high income elasticity of exports⁴, grow more robustly than in 2015.

REFERENCES

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- Çulha, O.Y. and K. Kalafatçılar, 2014, Türkiye'de İhracatın Gelir ve Fiyat Esnekliklerine Bir Bakış: Bölgesel Farklılıkların Önemi (in Turkish), CBT Research Notes in Economics No. 14/05.

⁴ For further details, see Çulha and Kalafatçılar (2014).

Box
4.2Consumer Confidence Indices and Financial Volatility⁵

Data pertaining to real economic activity, private consumption in particular, are released with a lag. Therefore, leading indicators on economic activity are important to policymakers and the public in general. In this context, monthly consumer confidence indices are monitored closely with regards to their implications for consumption and economic activity. This box analyzes the determinants of consumer confidence indices. Recently, consumer confidence indices have been highly volatile, which contradicts with the overall trend of the economic activity. This necessitates an accurate interpretation of the changes in consumer confidence indices for a better understanding of the drivers of these changes. The literature discusses that confidence indices are sensitive to macroeconomic variables and financial indicators such as exchange rates, stocks, etc. Yet, the econometric analysis presented in this box shows that consumer confidence indices are also affected by financial volatility in the short term. In particular, findings suggest that measures to provide stability in financial markets are also important for consumer sentiment.

To estimate consumer sentiment, four different indices were selected for the analysis. These include the CNBC-e CCI (Consumer Confidence Index)⁶, TURKSTAT-CBRT CCI, CNBC-e PCI (the Propensity to Consume Index and CNBC-e CEI (the Consumer Expectations Index). Financial volatility indicators were constructed for the currency basket, which is composed of the euro and the US dollar), the personal loan rate and the natural logarithm of the BIST index. Accordingly, within-month standard deviations were calculated using daily or weekly data. Consequently, the series were standardized to have a mean of zero and a standard deviation of one for easier interpretation of the regression coefficients. Moreover, the VIX index was used to capture the effect of external financial market volatility on consumer confidence. Adding this variable to the analysis is important for identifying the effect of domestic volatility indicators individually, since one would expect external volatility to affect both domestic financial volatility and confidence indices.

In order to explore the relationship between volatility indicators and changes in confidence indices, the following regression is used by adopting a general-to-specific approach. This entails omitting statistically insignificant variables one-by-one and preserving only the significant ones. The monthly change in confidence indices is the dependent variable, while the explanatory variables include the lags of confidence indices, GDP growth and its lags, macroeconomic indicators such as inflation and unemployment as well as financial variables, which are the currency basket (exchange rate), the personal loan rate (interest rate) and the BIST index (stock market index) as well as volatility indicators pertaining to these variables. The analysis covers the period between March 2005 and June 2015.

$$\Delta CCI_t = \alpha_0 + \sum_{i=-n}^k \beta_i \Delta GDP_{t-i} + \sum_{i=-1}^m \gamma_i \Delta CCI_{t-i} + \delta_1 \pi_t + \delta_2 U_t + \sum_{i=-n}^q \theta_i F_{it} + \sum_{i=-n}^p \mu_i V_{it} + \varepsilon_t$$

It should be noted that volatility indicators can be added to the regression one-by-one or all three at once. In any case, the results are robust to both alternatives. The level of financial variables is controlled when analyzing the effect of volatility indicators. For each financial indicator, Table 1 presents the effect of

⁵ For further details, see Karasoy (2015).

⁶ The CNBC-e CCI has been renamed as the Bloomberg HT confidence index since October 2015.

volatility on the changes in CNBC-e CCI and CNBC-e CEI, while Table 2 displays these effects on the changes in CNBC-e PCI and TURKSTAT-CBRT CCI. The regressions are conducted separately for each financial variable. Accordingly, GDP growth and unemployment, which represent economic activity, are observed to have no significant coefficients. Conversely, inflation is significant to consumer confidence along with financial indicators. Domestic volatility indicators for the exchange rate, the interest rate and the stock market index are negatively significant. Yet, financial indicators are usually insignificant except for the BIST index, which is significant for the CNBC-e PCI. The first difference of the VIX index, which represents external volatility, is found to be statistically significant as well, suggesting that the external market is a major factor affecting consumer confidence. For the CNBC-e CCI, the domestic volatility indicator is also statistically significant in addition to the VIX in all regressions. For the CNBC-e CEI, the exchange rate and the interest rate volatilities are statistically significant, whereas for the CNBC-e PCI, the exchange rate and the stock market volatilities are significant. For the TURKSTAT-CBRT CCI, only the exchange rate volatility is significant. The CNBC-e PCI, which represents the tendency for durable goods consumption, is found to be more sensitive to exchange rate and stock market volatilities than other consumer confidence indices while the coefficients of these indicators are larger.

Table 1. Regressions with Volatility Indicators-I

	Currency Basket	Personal Loan Rate	BIST Index	Currency Basket	Personal Loan Rate	BIST Index
	Change in CNBC-e CCI	Change in CNBC-e CCI	Change in CNBC-e CCI	Change in CNBC-e CEI	Change in CNBC-e CEI	Change in CNBC-e CEI
Inflation	-3.613*** (-3.27)	-4.205*** (-3.61)	-3.898*** (-3.33)	-2.460** (-2.40)	-2.926*** (-2.94)	-2.741*** (-2.76)
Change in VIX	-0.320** (-2.39)	-0.452*** (-4.78)	-0.377*** (-3.87)		-0.336*** (-3.47)	-0.342*** (-3.50)
Exchange Rate Volatility	-1.340* (-1.89)			-1.345*** (-2.79)		
Interest Rate Volatility		-0.913** (-2.33)			-0.964*** (-3.90)	
Stock Market Volatility			-1.531** (-2.01)			
Constant	1.806** (2.04)	2.075** (2.35)	2.603*** (2.76)	1.160 (1.28)	1.339 (1.59)	1.390 (1.64)
Number of Observations	122	122	122	122	122	122
Adjusted R ²	0.205	0.192	0.201	0.0999	0.134	0.117

t-statistics are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Table 2. Regressions with Volatility Indicators-II

	Currency Basket	Personal Loan Rate	BIST Index	Currency Basket	Personal Loan Rate	BIST Index
	Change in CNBC-e PCI	Change in CNBC-e PCI	Change in CNBC-e PCI	Change in TURKSTAT-CBRT CCI	Change in TURKSTAT-CBRT CCI	Change in TURKSTAT-CBRT CCI
Inflation	-4.724** (-2.53)	-5.846*** (-2.84)	-5.549*** (-2.64)	-1.265*** (-3.30)	-1.476*** (-3.75)	-1.476*** (-3.75)
Change in VIX		-0.625*** (-4.28)	-0.443*** (-3.00)	-0.0644* (-1.68)	-0.138*** (-4.10)	-0.138*** (-4.10)
Real BIST (logs)	-7.937** (-1.99)					
Change in Lagged CCI				0.161* (1.79)	0.181* (1.82)	0.181* (1.82)
Exchange Rate Volatility	-3.757** (-2.50)			-0.709*** (-2.87)		
Interest Rate Volatility						
Stock Market Volatility			-3.433*** (-3.00)			
Constant	83.77** (2.05)	2.926** (2.14)	4.001*** (2.64)	0.619** (2.13)	0.785*** (2.70)	0.785*** (2.70)
Number of Observations	122	122	122	122	122	122
Adjusted R ²	0.163	0.131	0.170	0.257	0.197	0.197

t-statistics are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

In Table 3, volatility indicators for the exchange rate, interest rate and the stock market are added all at once to the regressions for each confidence index. It is observed that the VIX index is highly significant and higher VIX leads to lower consumer confidence. Exchange rate and interest rate volatilities remain significant for the CNBC-e CCI, while for the CNBC-e PCI and the CNBC-e CEI, the interest rate and stock market volatilities are significant, respectively. Domestic volatility indicators are found to be statistically insignificant for the TURKSTAT-CBRT CCI.

Table 3. Regressions with Volatility Indicators-III

	(1)	(2)	(3)	(4)
	Change in CNBC-e CCI	Change in CNBC-e CEI	Change in CNBC-e PCI	Change in TURKSTAT-CBRT CCI
Inflation	-3.789*** (-3.38)	-2.926*** (-2.94)	-5.549*** (-2.64)	-1.476*** (-3.75)
Change in VIX	-0.316** (-2.34)	-0.336*** (-3.47)	-0.443*** (-3.00)	-0.138*** (-4.10)
Exchange Rate Volatility	-1.327* (-1.87)			
Interest Rate Volatility	-0.897** (-2.58)	-0.964*** (-3.90)		
Stock Market Volatility			-3.433*** (-3.00)	
Change in Lagged CCI				0.181* (1.82)
Constant	1.761* (1.97)	1.339 (1.59)	4.001*** (2.64)	0.785*** (2.70)
Number of Observations	122	122	122	122
Adjusted R ²	0.214	0.134	0.170	0.197

t-statistics are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

To sum up, this box shows how confidence indices, which are widely known to be sensitive to financial variables, are also prone to financial volatility. The domestic volatility indicators such as the exchange rate, interest rate and the stock market volatility as well as the VIX index representing external volatility affect confidence indices negatively. Moreover, confidence indices are affected by inflation rather than economic activity in the short term. The strong relation between confidence and volatility indicates that policies aiming at stability in financial markets may also be important for consumer sentiment.

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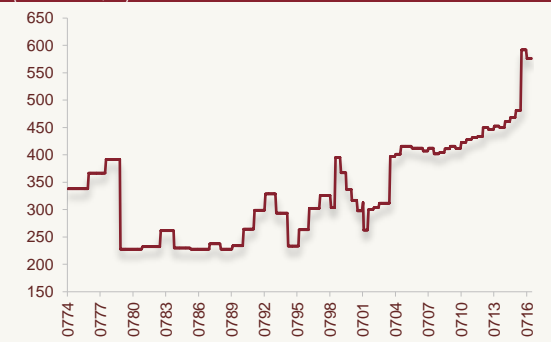
Box
4.3

The Effect of the Minimum Wage Hike on Wages

The minimum wage practice, which seeks to assure a certain welfare level for workers, affects a major portion of the Turkish labor market. The massive minimum wage hike in early 2016 has redirected attention to the effects of the minimum wage on the labor market. Gürcihan-Yüncüler and Yüncüler (2016) analyze how a similar minimum wage hike in 2004 affected overall wages. In the spirit of this study, this box makes a prediction about the possible impacts of the 2016 wage hike on overall wages.

Minimum wage has been determined on a national level to cover the whole economy since 1974. Chart 1 shows the course of real gross minimum wage over the years. Accordingly, the minimum wage level has changed notably over time. During the Turkish lira depreciation in 1979 and in the following inflationary period, the minimum wage decreased in real terms. In the subsequent decade, the minimum wage remained constant in real terms. The early 90s saw some increases in real wages, which were interrupted by the crises in 1994 and 2001. The minimum wage surged in 2004, and has remained on a steady upward track starting from 2006. The 2016 minimum wage rise led to a second level shift after 2004.

Chart 1. Real Gross Minimum Wage for Workers Aged 16+*
(2003 Prices, TL)



* Real gross minimum wage is current average gross minimum wage deflated by average CPI (2003=1). The average gross minimum wage for 2003 is equal to 306 TL. The 2016 CPI is based on January Inflation Report assumptions. Source: Ministry of Labor and Social Security, TURKSTAT, CBRT.

Table 1 gives a brief account of the minimum wage developments between 2003 and 2013 and the position of the minimum wage in wage distribution. The wage distribution in Turkey shows that there are many people earning at or under minimum wage. In this period, about 8 percent of total wage-earners were cumulated around the 5-percent neighborhood of the minimum wage, while 23 percent of total wage-earners earned less than the minimum wage. When the workers earning between the old and new minimum wage are added, the potential impact of minimum wage soars to a remarkable 45 percent in 2003. Therefore, minimum wage is binding in Turkey. In 2013, the minimum wage to median wage ratio was 0.49 in OECD members, whereas in Turkey, this ratio was estimated to be 0.80. When minimum wage is proportioned to the lower end of the wage distribution, the picture becomes more dramatic as the ratio of the minimum wage to the wage level at the 10th percentile of wage distribution is above 1.

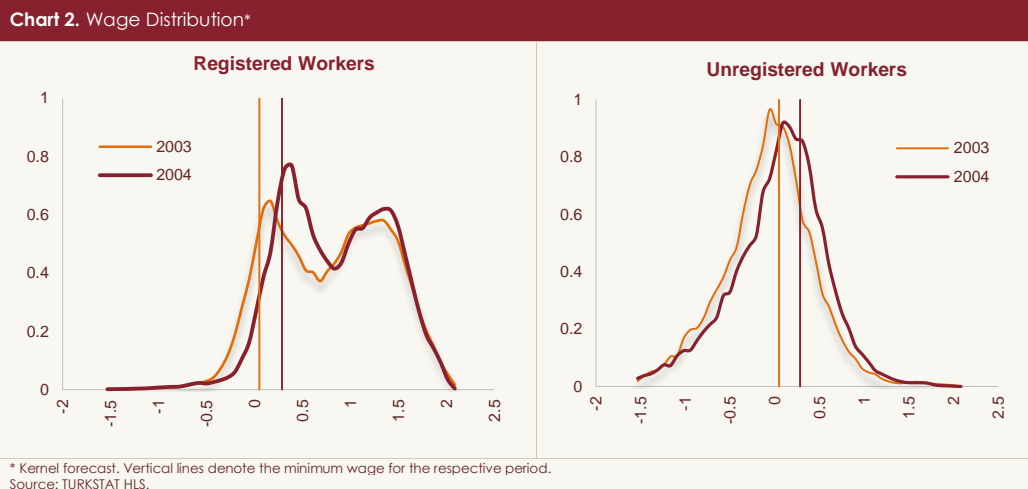
In 2004, the net minimum wage hike was a yearly 37.6 percent on average, most of which took place in the first half of the year. The end-2004 CPI inflation was expected to be 13.9 percent as of end-2003, yet the actual average annual inflation rate was 8.9 percent. Based on the actual inflation, the net minimum wage hike was 26.4 percent in real terms, while the cost for employers was up by 20.5 percent on real basis due to some regulation changes and the government subsidy for a portion of the insurance premiums to be paid by employers.

Table 1. Summary Statistics on Minimum Wage and Wage Distribution

	Expected Inflation*	Minimum Wage			Minimum Wage			Wage-earners below Minimum Wage (Percent)	Wage-earners in 5-percent Neighborhood (Percent)
		Net** (TL)	Annual Percent Change	Annual Percent Change (Real)	Mean	Median	10 th Percentile		
2003	24.7	226	30	4.3	0.54	0.75	1.56	23.5	5.6
2004	13.9	311	37.6	20.8	0.6	0.78	1.66	27.2	7.7
2005	8.7	350	12.5	3.5	0.58	0.76	1.58	25.3	10.4
2006	5.84	380	8.6	2.6	0.56	0.74	1.42	23.8	7.9
2007	7.11	411	8.2	1.0	0.65	0.8	1.7	20.4	8.9
2008	6.14	492	19.7	12.8	0.57	0.74	1.38	23.5	7.3
2009	8.45	537	9.1	0.6	0.56	0.74	1.38	23.3	6.4
2010	6.56	588	9.5	2.8	0.56	0.75	1.37	23.5	6.7
2011	6.95	644	9.5	2.4	0.55	0.77	1.34	23	7.9
2012	7.1	720	11.8	4.4	0.55	0.77	1.34	22.9	8.9
2013	6.34	789	9.6	3.0	0.55	0.76	1.26	20	7.2

* Expected annual inflation for the respective year as of the end of the previous year.
 ** Net minimum wage after insurance premiums and tax payments.
 Source: Ministry of Labor and Social Security, CBRT Survey of Expectations, TURKSTAT HLS.

Chart 2 shows the wage distribution of registered and unregistered workers for 2003 and 2004. Although the minimum wage applies to registered workers, it also has some implications regarding unregistered workers as suggested by wage distributions. The wage distribution of registered workers is twin-peaked, the first peak settling around the minimum wage. Similarly, the wage distribution of unregistered workers peaks in the minimum wage neighborhood. Moreover, after the minimum wage hike, the wage distribution shifts to the right for both registered and unregistered workers. This common movement and the peak value of both distributions to be in the minimum wage neighborhood imply that the minimum wage serves as a reference for unregistered workers as well.



Methodology and Empirical Findings

Firms resort to various adjustment mechanisms in case of a minimum wage rise. These may include wage hikes, reduced employment, restrictions on new hires or increased unregistered employment. Therefore, how much a minimum wage rise will pass through to total wages depends on the density of workers earning at or around the minimum wage and how promptly firms would adopt other adjustment mechanisms.

In this analysis, the effect of the 2004 minimum wage hike on wages is explored using the micro datasets of 2003 and 2004 from the TURKSTAT HLS. The dataset covers all wage-earners working between 35 and 70 hours. The effect of the minimum wage hike on wages is estimated using a difference-in-differences methodology. This methodology is based on the comparison of sub-groups of workers that display some change in the density of minimum wage earners after a policy change. Although minimum wage is set equally for every worker, a change in minimum wage may have a different effect on each worker as wage distribution differs by industry, occupation and region, which helps to estimate the effect of minimum wage hike. In the relevant economic literature, sub-groups are determined based on differences across region, industry and wage distribution. Here, this effect is estimated via the interaction of industry by occupation (industry*occupation). Accordingly, 9 industries were selected based on the EU standard of NACE Rev. 1.1 and 9 occupations were chosen according to the international occupational classification of ISCO 88, which yields a total of 81 interaction groups.

The impact variable is defined as the workers paid in the 5-percent neighborhood of the old and the new minimum wage. The share of workers earning in this interval was 26.4 percent on average in 2003. Yet, this varies significantly across interaction groups, ranging between 0 and 57.3 percent. For the difference-in-differences analysis, the following equation is estimated:

$$Y_{i,j,t} = \alpha + \beta \cdot T_t + G_j + \theta \cdot (T_t \times Impact_j) + \gamma \cdot X_{i,j,t} + \varphi \cdot Z_{j,t} + \varepsilon_{i,j,t}$$

Where i, j and t denote persons, interaction groups and time indices, respectively. Y refers to hourly wages, while X denotes personal attributes, Z signifies the time-varying value added, which also varies across industries, and ε shows the error term. T is the dummy variable for time and G is the dummy variable for the interaction group. The parameter of interest is θ that denotes the effect of a minimum wage hike. This coefficient reflects the marginal increase in wages for groups that are affected more significantly after a wage hike. Economic activity is added to the equation in order to control for other shocks that may affect industries. Personal attributes include data on observable personal traits and working conditions.

Both the binary and continuous versions of the impact variable are used in estimations. For the binary impact variable, occupation and industry groups are classified into two groups: one with lower-than-average susceptibility to minimum wage (control group) and the other with higher-than-average susceptibility to minimum wage (treatment group). The binary impact variable is equal to 0 in the control group and equals 1 in treatment group. On the other hand, the continuous impact variable is estimated individually for each group.

Table 2 gives a summary of the findings. The results show that groups with a high density of minimum wage earners are subject to larger wage increases. The coefficient of the interaction of time and impact variables is statistically significant and positive for both models. The effect of a 1-percent increase in real minimum wage on real wages ranges from 0.27 to 0.46 percent. Yet, certain points should be noted before adapting these findings to current minimum wage hike. The real GDP growth was 8 percent in 2004 in annual terms, so the minimum wage hike occurred when economic activity was robust. In such an economic environment, the minimum wage hike had a small impact on employment and unregistered employment, while it had an impact on total wages, which soared amid rising minimum wage. In a sluggish growth episode, on the other hand, the minimum wage hike might have stronger implications for employment and unregistered employment, while wages may remain constant.

Table 2. Estimation Results**Dependent Variable: Real Hourly Wages (logs)**

Continuous Impact Variable		Binary Impact Variable	
Explanatory Variables		Explanatory Variables	
T (2004=1)	0.0131 (0.0140)	T (2004=1)	0.0680*** (0.0157)
Impact x T	0.0170*** (0.00254)	Impact x T	0.00411*** (0.00098)
Control Variables	Yes	Control Variables	Yes
Number of Observations	97140	Number of Observations	97140
R ²	0.534	R ²	0.534
Weighted Average of the Impact Variable	0.27	Share of the Treatment Group	0.65
Minimum Wage Impact (θ x Weighted Average Impact)	0.46	Minimum Wage Impact (θ x Share of the Treatment Group)	0.27

Standard errors are in parenthesis. *** p<0.01. Control variables include sectoral value added in logs, gender, civil status, age groups, year of schooling, firm size and dummy variables for rural-urban.

Furthermore, the expected inflation was 13.9 percent at the end of 2003, compared to the actual inflation of 8.6 percent. If firms had raised wages on par with the expected inflation, this might have caused a 5 percentage point discrepancy in real terms. The difference between estimation models may reflect the deviation between the expected and actual inflation rates. More specifically, a higher effect is observed in the estimation of the model using the continuous impact variable, which is dominated by higher wage groups. Considering that wage indexation to expected inflation is relatively less common in the upper end of the wage distribution, this higher effect might have resulted from the deviation of actual inflation from the expected inflation. Accordingly, the low impact coefficient may be more reliable.

Finally, the real net wage growth was 26.4 percent in 2004, while the cost for employers surged by 20.5 percent due to some regulation changes and the government subsidy for part of the insurance premiums to be paid by employers. The relatively low cost for employers may have amplified the pass-through of the minimum wage hike to wages.

Table 3. Cost Distributions (2006-2011 Average, Percent, Firms with Workers Aged 20+)

	Industry			Services	Construction	Non-Agriculture
	Manufacturing	Energy	Mining			
1.Total Personnel Expenses	16.0	24.7	21.7	33.3	14.8	23.6
2. Raw Material Expenses	58.9	39.2	32.6	20.2	60.0	41.5
3. Electricity Expenses	2.3	5.7	4.6	1.9	0.4	2.0
4. Fuel Expenses	2.6	4.2	15.5	4.2	3.8	3.6
5. Rent (building, machinery and equipment)	1.5	1.3	1.8	5.2	1.0	3.1
6. Financing Expenses	2.5	4.5	2.5	5.1	1.7	3.6
7. Other Operational Expenses*	9.6	10.7	14.5	22.2	9.1	15.2
8. Other Expenses**	6.8	9.6	6.9	7.7	9.2	7.4
Total***	100	100	100	100	100	100
Firm's share distribution (2006-2011 average, percent)	43.6	0.7	1.5	44.2	9.9	100

* Includes other operational expenses, communication, travel, water, advertisement, marketing, stationery, repair, insurance, accounting, legal services and other service-related expenses of service ventures.

** Includes extraordinary expenses and losses and expenses and losses on other activities like foreign exchange losses, interest expenses, allowance expenses and commissions.

*** Depreciation is not included.

Source: Gürçühan-Yüncüler and Ögünc (2015), TURKSTAT Annual Industry and Service Statistics.

The first-round effects of the pass-through of the minimum wage hike to prices through costs can be observed via the effect of minimum wage hikes on other wages. How this affects costs depends on the cost structure of firms. Table 3 shows the average cost structure of firms by industries. Accordingly, in the labor-intensive services sector, personnel expenses consisting of personnel payments, social security payments as well as benefit and severance payments account for 33 percent of total costs. According to the personnel expenses, the services sector is followed by energy and mining. Across manufacturing and construction sectors, the share of personnel expenses amounts to about 15 percent of the total costs. Against this background, the services industry is likely to see a larger pass-through of labor costs to firm costs than in other sectors. The pass-through of firm costs to consumer inflation, on the other hand, is expected to be more limited and gradual, because not all goods and services in the CPI basket are produced domestically or not all prices are determined by cost factors.

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